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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,124	06/16/2006	Bernd Szyszka	P29662	1797
7055 7590 12/17/2009 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER				
MCDONALD, RODNEY GLENN				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
12/17/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com

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# Office Action Summary

**Application No.**

10/583,124

**Applicant(s)**

SZYSZKA ET AL.

**Examiner**

Rodney G. McDonald

**Art Unit**

1795

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-37 is/are rejected.
- 7) ☒ Claim(s) 38 and 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 19-23, 25, 28-33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampkin (U.S. PGPUB 2002/0092766 A1) in view of Narizuka et al. (U.S. Pat. 5,320,729).

Regarding claim 19, Lampkin teaches a magnetron coating system including a first coating source (i.e. 14A). Lampkin teaches an auxiliary substrate (i.e. 12) arranged between the first coating and the area that is provided for receiving the substrate (i.e.

19) to be coated. A magnetron (i.e. 28) whereby the auxiliary substrate (i.e. 12) forms a cathode for this magnetron (i.e. 28). (Paragraphs 0047-0053; 0060)

Regarding claim 20, Lampkin teaches that the auxiliary substrate is embodied cylindrically and the magnetron is a rod cathode magnetron. (Paragraph 0048)

Regarding claim 21, Lampkin teaches that the first coating source can be a planar magnetron. (Paragraph 0048)

Regarding claim 22, Lampkin teaches utilizing shields for coating sources. (Paragraph 0078)

Regarding claim 25, Lampkin teaches a method for depositing layers. A layer is deposited on an auxiliary substrate (i.e. 12) by means of a first coating source (i.e. 14A) and this auxiliary substrate is used as a cathode for coating a substrate (i.e. 12) by means of a magnetron (i.e. 28). (Paragraphs 0047-0053; 0060)

Regarding 28, Lampkin teaches that the deposited layer is a metal layer. (Paragraph 0078)

Regarding claim 29, Lampkin teaches that the metal layer comprising mainly an element that has a higher mass number than the average mass number of the material of the auxiliary substrate. (Paragraph 0078)

Regarding claim 30, Lampkin teaches the operation of the first magnetron takes place with inert gas and the operation of the second magnetron takes place with inert and/or reactive gas. (Paragraph 0078)

Regarding claim 31, Lampkin teaches the inert gas contains argon and/or oxygen. (Paragraph 0078)

Regarding claim 36, Lampkin teaches multilayering coatings on substrates.  
(Paragraph 0063)

The differences between Lampkin and the present claims is that means for determining the area density of the auxiliary substrate is not discussed (claim 19), the means for determining the area density contains a device for determining the x-ray fluorescence is not discussed (claim 23), the area density of the auxiliary substrate being determined is not discussed (Claim 25), the area density being determined on the auxiliary target after this has been used as a cathode for coating a substrate by means of a second magnetron is not discussed (Claim 32) and the area density of the auxiliary target being determined by means of x-ray fluorescence is not discussed (Claim 33).

Regarding claims 19, 23, 25, 32, 33, Narizuka et al. teach utilizing X-Ray fluorescence to determine the make up of a target. (Column 2 lines 61-62)

The motivation for utilizing the features of Narizuka et al. because it allows for determining the make up of a target. (Column 2 lines 61-62)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Lampkin by utilizing the features Narizuka et al. because it allows for determining the make up of a target.

Claims 24 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampkin in view of Narizuka as applied to claims 19-23, 25, 28-33 and 36 above, and further in view of Belkind et al. (U.S. Pat.5,338,422).

The difference not yet discussed is the magnetron having several cathodes, each of which contains an auxiliary substrate is not discussed (Claim 24) and that a layer depositing on the substrate which contains titanium dioxide is not discussed (Claim 37).

Regarding claim 24, Belkind et al. teach utilizing several magnetrons with several cathodes. (See Fig. 1)

Regarding claim 37, Belkind et al. teach forming titanium dioxide. (Column 4 lines 50-53)

The motivation for utilizing the features of Belkind et al. is that it allows for depositing on large substrates. (Column 2 lines 10-12)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Belkind et al. because it allows for depositing on large substrates.

Claims 26, 27 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampkin in view of Narizuka as applied to claims 19-23, 25, 28-33 and 36 above, and further in view of Lampkin (U.S. Pat. 5,405,517).

The differences not yet discussed is the deposited layer thickness on the auxiliary substrate being less than 100 nm is not discussed (Claim 26), the deposited layer thickness on the auxiliary substrate being less than 10 nm is not discussed (Claim 27) and the magnetron being operated with DC voltage is not discussed (Claim 34).

Regarding claims 26, 27, Lampkin '517 teach the surface of the auxiliary substrate should be coated at a thickness greater than that removed in a single rotation. (Column 5 lines 54-56)

Regarding claim 34, Lampkin '517 teach that the magnetron is can be operated with a DC voltage. (Column 2 lines 13-16)

The motivation for utilizing the features of Lampkin '517 is that it allows for forming compound films on a substrate. (Column 3 lines 9-12)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Lampkin '517 because it allows for forming compound films on a substrate.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lampkin in view of Narizuka as applied to claims 19-23, 25, 28-33 and 36 above, and further in view of Lehan et al. (U.S. Pat. 5,814,195).

The difference not yet discussed is the magnetron operates as a magnetron having several cathodes with a frequency of approximately 10 kHz to approximately 100 kHz. (Claim 35)

Regarding claim 35, Lehan et al. teach utilizing several cathodes providing with a frequency of approximately 10 kHz to 100 kHz. (Column 2 lines 21-27)

The motivation for utilizing the features of Lehan et al. is that it allows for preventing extinguishing of the plasma. (Column 2 lines 39-41)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized Lehan et al. because it allows for preventing extinguishing of the plasma.

***Allowable Subject Matter***

Claims 38 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 38 are indicated as being allowable over the prior art of record because the prior art of record does not teach determining a deposition rate in a plasma area between the first coating source and the auxiliary substrate, and after the determining the area density of the auxiliary substrate, determining an area density of the substrate from a mass balance of the auxiliary substrate.

Claim 39 is indicated as being allowable over the prior art of record because the prior art of record does not teach the device determines the area density of the auxiliary substrate at a location behind a plasma area between the auxiliary substrate and the substrate to be coated with respect to a direction of rotation of the auxiliary substrate, the location is before a plasma area between the first coating source and the auxiliary substrate with respect to the direction of rotation of the auxiliary substrate, and the device comprises an x-ray source that irradiates the auxiliary substrate at the location and a photodetector that determines x-ray radiation reflected from the auxiliary substrate.



***Response to Arguments***

Applicant's arguments filed September 22, 2009 have been fully considered but they are not persuasive.

In response to the argument that the prior art does not teach a device structured and arranged to determine an area density of the auxiliary substrate, it is argued that Narizuka et al. teach utilizing X-Ray fluorescence to determine the make up of a target. (See Narizuka Column 2 lines 61-62) Therefore one of ordinary skill in the art would position a device to determine the make up (i.e. density of the target). (See Narizuka discussed above)

In response to the argument that the prior art does not teach determining an area density of the auxiliary substrate, it is argued that Narizuka teach utilizing X-ray fluorescence to determine the make up of a target and therefore the density of a target. (See Narizuka discussed above)

In response to the argument that Narizuka does not teach determining the area density of an auxiliary substrate arranged between a first coating source and a substrate to be coated, it is argued that Narizuka teach utilizing X-ray fluorescence to determine the area density of a target and thus suggest that the auxiliary substrate area density can be determined because it acts as a target. (See Narizuka discussed above)

In response to the argument that Narizuka's sputter target is different than the auxiliary substrate, it is argued that while Narizuka's sputter target is different than the auxiliary substrate in the sense that the auxiliary substrate is a target material that has

material replaced as it is being sputtered one of ordinary skill in the art would utilize X-ray fluorescence to determine the properties of any target material. (See Narizuka discussed above)

In response to the argument that Narizuka does not teach a device comprising a detection device structured and arranged to determine x-ray fluorescence, it is argued that Narizuka teach an x-ray fluorescence device that determines the properties of target materials. (See Narizuka discussed above)

In response to the argument that Narizuka does not teach determining the area density of the auxiliary substrate comprises x-ray fluorescence, it is argued that Narizuka teach an x-ray fluorescence device that determines the properties of target materials (i.e. the target density). (See Narizuka discussed above)

In response to the argument that the prior art does not teach the area density of the auxiliary substrate is determined after the coating of the substrate, it is argued that Narizuka teach an x-ray fluorescence device that determines the properties of target materials (i.e. the target density) and thus one of ordinary skill in the art would utilize the teachings of Narizuka because the auxiliary substrate is target material. (See Narizuka discussed above)

In response to the argument that the prior art does not teach a thickness of the layer deposited on the auxiliary substrate to be less than 100 nm or the thickness of the layer deposited on the auxiliary substrate to be less than 10 nm, it is argued that Lampkin '517 teach the surface of the auxiliary substrate should be coated at a

thickness greater than that removed in a single rotation which would relate directly to the controllable amount of material removed. (See Lampkin ' 571 Column 5 lines 54-56)

In response to the argument that the prior art does not teach determining a deposition rate in a plasma area between the first coating source and the auxiliary substrate, and after the determining the area density of the auxiliary substrate, determining an area density of the substrate from a mass balance of the auxiliary substrate, it is agreed that the prior art of record does not this claimed subject matter.

In response to the argument that the prior art of record does not teach the device determines the area density of the auxiliary substrate at a location behind a plasma area between the auxiliary substrate and the substrate to be coated with respect to a direction of rotation of the auxiliary substrate, the location is before a plasma area between the first coating source and the auxiliary substrate with respect to the direction of rotation of the auxiliary substrate, and the device comprises an x-ray source that irradiates the auxiliary substrate at the location and a photodetector that determines x-ray radiation reflected from the auxiliary substrate, it is agreed that the prior art does not teach this claimed subject matter. Specifically there is no direction or instruction from Narizuka about the location of the device and the device being an x-ray source that irradiates the auxiliary substrate at the location and a photodetector that determines x-ray radiation reflected from the auxiliary substrate.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/  
Primary Examiner, Art Unit 1795

Rodney G. McDonald  
Primary Examiner  
Art Unit 1795

RM  
December 11, 2009